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## Exploring a Public Health Perspective on Pedestrian Planning

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### Abstract

A pedestrian plan is a public document that explains a community's vision and goals for future pedestrian activity. This study explored whether involvement by public health professionals in the development of pedestrian plans was associated with certain characteristics of the plan (vision, goals, identified programs, and evaluation). This study identified, collected, and analyzed content of all pedestrian plans in North Carolina through 2008. Among the 46 plans, 39% reported involvement by public health professionals in their development. Overall, 72% of pedestrian plans included a vision statement; health was mentioned four times and quality of life was mentioned five times. Slightly more than half (52%) of the plans included goals to improve public health. Plans that involved public health professionals more often included the type of physical activity, safety, or education program. Only 22% of all pedestrian plans included a proposal to evaluate their implementation. Plans that included public health professionals were less likely to include an evaluation proposal (11%) compared with those that did not involve public health professionals (21%). Public health professionals are encouraged to seek involvement in the pedestrian planning process, particularly in the areas of health program development, implementation, and evaluation.

### Keywords

pedestrian; physical activity; planning; public health; recreation; walking

Physical activity continues to remain suboptimal in the United States, with many youth and adults not meeting the minimum level of physical activity recommended by the 2008 "Physical Activity Guidelines for Americans" (Centers for Disease Control and Prevention, 2008; U.S. Department of Health and Human Services, 2008). Based on a systematic review of physical activity studies, the 2002 U.S. Guide to Community Preventive Services recommended the creation of or enhanced access to places for physical activity combined with informational outreach activities (Kahn et al., 2002). In addition, they recommended community- and street-scale urban design and land use policies and practices to promote physical activity (Heath et al., 2006). A transdisciplinary focus is needed to address these recommendations, with a goal of increasing population levels of physical activity (Sallis, 2009).

Both planners and public health professionals are interested in walking and bicycling, the former generally from a transportation perspective and the latter typically with a focus on health promotion. Several reviews targeted at addressing the connection between planning

and public health discuss that overlap (Lee & Vernez Moudon, 2004; Saelens, Sallis, & Frank, 2003). Common to both disciplines is an interest in changing the built environment, at the community- and street scales, to support increased physical activity. Evidence is accumulating about how infrastructure improvements, land use decisions, programs that aim to manage neighborhood road traffic, and efforts to make streets and sidewalks safer for active travel influence travel patterns and physical activity among both children and adults (Ferreira et al., 2007; Saelens et al., 2003; Wendel-Vos, Droomers, Kremers, Brug, & van Lenthe, 2007).

Modifying the incentives and policies that determine the built environment, and which may ultimately create barriers or supports for physical activity depending on how they are implemented, can be a promising strategy to increase physical activity. Accordingly, in 2009 the American Academy of Pediatrics recommended that governmental groups pass and promote laws and regulations to create new or expand existing efforts to promote active living (Tester, 2009). One avenue to accomplish promotion is through pedestrian and bicycle planning, which identifies policies, programs, promotions, and facilities that make it easier to walk and bike in local communities. In support of this, in 2008, the Prevention Institute encouraged localities to develop, adopt, and implement pedestrian and bicycle plans (Prevention Institute, 2008). Some plans address pedestrian and bicycle needs in a single plan rather than two separate documents, here referred to collectively as a “pedestrian plan.”

A pedestrian or bicycle plan is a public document that explains a community’s vision for future pedestrian or bicycle activity. Table 1 summarizes items typically in a plan. Each plan is tailored to its community, depending on needs and priorities; however, there are shared attributes among high quality plans (Berke, Godschalk, Kaiser, & Rodriguez, 2006). High-quality plans describe a vision, identify objectives and goals that will assist and measure progress in achieving the vision, result from community input and feedback, assess current and future conditions, prioritize proposals for investments, programming, and policy changes, and propose how to evaluate implementation. As such, plans contain a blueprint for the actions necessary to achieve a vision. Although whether pedestrian and bicycle plans are effective in stimulating investments, programming, and activities to support active living remains to be shown, other plans have been related to improved outcomes in the context for hazard mitigation (Brody, 2003a, 2003b; Burby & Dalton, 1994), environmental management (Norton, 2005), and sustainable development (Berke & Manta Conroy, 2000). It follows that high quality pedestrian and bicycle plans are expected to contribute to increasing physical activity in the communities for which the plans are developed.

Plans typically cover a cross-section of interests, reflecting the diversity of professionals from various fields who develop them. They may include representatives from city planning, transportation planning, parks and recreation, and engineering/public works, in addition to members of the public. Plans may also incorporate the interests of public health professionals. Public health professionals can contribute to the planning process in a number of ways, such as incorporating health into the vision and goals statements, including more health-related programming, and providing a greater focus on evaluation and implementation. To our knowledge, no systematic description or evaluation of the content of pedestrian plans has been published to date.

We explored the involvement of public health professionals, specifically those in local jurisdictions, in the development of pedestrian plans. We focused specifically on plans in North Carolina and studied who was involved in the creation of the pedestrian plan and whether pedestrian plans that involved public health professionals would more often (a) include elements of public health in their vision and goals statements, (b) include more health related programming and promotions, and (c) have stronger evaluation strategies compared to those without direct influence from public health.

## METHOD

We sought to identify and collect all local or regional pedestrian plans in North Carolina through 2008. We chose North Carolina because of our knowledge of planning in the state and the relatively large number of pedestrian plans, in part because of state incentives to create such plans (Evenson, Satinsky, Aytur, & Rodriguez, 2009). In 2004, the North Carolina Department of Transportation, Division of Bicycle and Pedestrian Transportation, and the Transportation's Planning Branch initiated a competitive grant program to encourage the development of local pedestrian and bicycle plans (North Carolina Department of Transportation & Division of Bicycle and Pedestrian Transportation, 2008). This funding program has continued through our study period (2008) and funded, on average, 6 to 14 pedestrian plans yearly since 2004.

For updated pedestrian plans (i.e., a plan that revises a previous plan for the same area), we counted and collected only the most recent version. To find plans, we conducted web searches, accessed the North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation plan library, and called jurisdictions when necessary for follow-up. Additional pedestrian plans were identified through a listserv of North Carolina planners, to which we sent a request for verification of our plan list. In 2009, we also surveyed all municipalities with a population of 5,000 or greater and a 50% random sample of municipalities with a population of less than 5,000 with a questionnaire, through which we identified additional plans.

Pedestrian plans in North Carolina cover a variety of geographic areas at the state, county, and municipal levels. Within those areas, plans can be created for metropolitan planning organizations (MPOs), which are regional government entities mandated by the federal government and defined for urbanized areas with populations greater than 50,000 to conduct transportation planning in cooperation with state and federal governments (North Carolina Department of Transportation, 2008). Plans also can be created for rural planning organizations (RPOs), transportation entities that work with state governments to plan rural transportation systems and provide advice on rural transportation policy (North Carolina Department of Transportation, 2009). In fall 2008, North Carolina included 100 counties, 543 municipalities, 17 MPOs, and 20 RPOs.

We analyzed in detail the content of all pedestrian plans we found and developed a coding tool to extract the content of interest and assess overall quality for each plan, based from elements we identified of a high-quality master plan (Rodriguez, Aytur, Evenson, & Salvesen, 2008). The coding tool (Aytur, Evenson, Rodriguez, Salvesen, & Satinsky, 2008)

collected information on each plan's vision, goals, public participation, fact base (analysis of current conditions), proposals, and implementation. Early versions of the protocol were circulated among planning professionals and our North Carolina Physical Activity Policy Research Center advisory group for feedback and improvement. Each plan was coded by one of six centrally trained reviewers. All coded plans were checked by the same second reviewer to ensure consistency in interpretation across plans. Discrepancies between the first and second reviewer were resolved by consensus.

Of relevance to this study, the protocol collected information about the involvement of public health and other professionals and groups in creating pedestrian plans. If a plan identified an individual as a participant in the planning process, but a title of the person was not provided, then we searched online or called the jurisdiction to obtain the title or department affiliation of that person. Coders also assessed elements of the plan's vision, goals, programs, and evaluation. Frequencies and cross-tabulations were performed using this information; we highlight differences of at least 5%. For this analysis, we excluded the state pedestrian plan.

## RESULTS

We identified 33 stand-alone pedestrian plans and 13 combined pedestrian and bicycle plans. Plans varied in year of publication, ranging from 1994 to 2008, with 42 of the 46 plans completed between 2004 and 2008. Eight plans were at the regional level (4 MPO, 1 RPO, 2 county, 1 interjurisdictional entity–Center of the Region Enterprise, 2008) and 38 were at the municipal level.

### Stakeholders Involved in Plan Development

Among the 46 municipal, regional, and county pedestrian plans, 39% had a public health professional involved in their development (Table 2). Public health professionals were more often involved in plans completed in 2006 to 2008 as compared to plans finished between 1994 and 2005 (46% vs. 18%). The most common stakeholders included a committee or advisory board of stakeholders including citizens (89%), local or state agency staff (89%), land use planning professionals (74%), and state transportation planning representatives (63%).

### Vision and Goals

Among the 46 pedestrian plans, 72% ( $n = 33$ ) included a vision statement. In the 33 vision statements, health was mentioned 4 times. Examples included “improved health of the community,” “to reduce its citizens’ future health problems,” “promote healthy lifestyles,” and “promote public health and safety.” Five other plans specifically mentioned “quality of life” in their vision statement. A public health professional was acknowledged for involvement in developing four of the nine plans with vision statements that mentioned health or quality of life.

All but one pedestrian plan included goal statements; however, 70% of the plans did not link goals to measureable objectives. Fifteen percent linked some goals to potentially measurable objectives, but did not necessarily indicate how the objectives would be measured, and 13%

linked most goals to measureable objectives. The most common goal statements from the plans included to improve safety and prevent injuries and accidents (89%), to enhance pedestrian network connectivity (85%), to improve or maintain existing pedestrian facilities (78%), to create a balanced transportation system (support nonautomobile usage; 57%), and to improve public health (52%; Table 3). Some plans mentioned other health-related goals, such as supporting walkable communities or active living (44%), enhancing quality of life (39%), promoting social equity (24% mentioned this with respect to at least two populations, such as elderly, low-income, or disabled), encouraging physical activity for transportation (26%) or leisure (11%), and encouraging general recreation (22%).

Pedestrian plans developed with public health professional involvement, compared with those without, were somewhat more likely to have goals that included public health elements (56% yes vs. 50% no). The same was found for goals related to encouraging physical activity for leisure (17% vs. 7%), general recreation (28% vs. 18%), safety (100% vs. 82%), and social equity for specific populations (28% vs. 21%), but not for social equity for all community members (17% vs. 25%). There were no appreciable differences when comparing the presence and absence of public health involvement for goals related to encouraging physical activity for recreation (28% vs. 25%). Goals related to quality of life (33% vs. 43%) and supporting walkable communities (39% vs. 46%) were less common among plans that involved public health professionals compared to those that did not.

### Programs and Promotions

Among the 46 pedestrian plans, 74% included discussion of cultural, recreational, and health related walking programs or promotions (Table 4). Safety programs were most commonly mentioned in those plans (85%). For seven of the eight types of programs we collected, the inclusion of the program in the plan was more common when public health professionals helped create the plan. The one exception was local agency initiatives (11% yes vs. 18% no).

### Evaluation

Only 22% ( $n = 10$ ) of pedestrian plans included a proposal to evaluate the implementation of the plan. Of the 10 pedestrian plans that included evaluation, 8 of them identified persons, organizations, or agencies accountable for the evaluation. Plans that included public health professionals were less likely to include an evaluation plan (11%) compared with those that did not involve public health professionals (21%). An additional 10 plans mentioned the need for evaluation but did not include a strategy for the process.

The depth of evaluation discussion varied across plans. Only 2 of the 10 plans that included evaluation also identified at least one specific indicator to measure. Five of the plans that included evaluation identified at least one generic category of indicators to measure in the future. No plans included SMART (specific, measureable, agreed on, relevant, time frame oriented) objectives or linked evaluation to measurement of specific goals or objectives stated earlier in the plan.

## DISCUSSION

Planning processes fundamentally affect health (Corburn & Bhatia, 2007). Accordingly, the built environment literature discusses the benefits of collaboration between public health and planning professionals and encourages more coordination (Corburn, 2004; Hoehner, Brennan, Brownson, Handy, & Killingsworth, 2003; Lee & Vernez Moudon, 2004; Malizia, 2005; Saelens et al., 2003). More broadly, the literature on the social determinants of health emphasizes multiple strategies, including building healthy public policy, creating supportive environments, and strengthening community action to improve population health (Evans & Stoddart, 2003). Pedestrian planning provides an opportunity to promote these strategies while strengthening interdepartmental coordination to achieve outcomes that meet multidisciplinary goals. This study assessed the involvement of local public health professionals in the development of municipal and regional pedestrian plans.

In North Carolina, we identified 46 pedestrian plans through 2008 and many plans included goals closely related to public health's mission. Increasing safety, preventing injuries, enhancing walkability, and promoting social equity for specific populations were prominent. However, approximately one third of the plans mentioned involvement from public health professionals in the plan development. Of note, that involvement was much higher (46%) when restricting the sample to newer plans finished during the years 2006 to 2008 compared with plans finished prior to the period. This trend is encouraging, yet there is opportunity for greater public health professional participation in plan development.

Another opportunity for public health professionals is to encourage plan development in localities where they do not already exist. With 544 municipalities in North Carolina, we documented that only 38 of them have pedestrian plans. For some municipalities, pedestrian planning may be documented in other policy documents, such as in transportation, land use, trail, or greenway plans. For public health professionals working to increase physical activity through community environments and policies, a first step to becoming involved may be to inquire how pedestrian planning occurs in their community and where it is documented. Additional financial support for plans to be developed in smaller municipalities is important, since they are less likely to have such plans (Evenson et al., 2009) and yet have a need for improving pedestrian activity.

We expected that plans developed with public health professional involvement would be more likely to include health-related elements in the vision and goals statements compared to those without. This was confirmed when exploring the goals of the plan, whereby several health elements (e.g., encouraging physical activity for leisure, general recreation, safety, and social equity for specific populations) were more common among plans that included public health professionals. However, goals related to quality of life and supporting walkable communities were less common among plans that involved public health professionals compared to those that did not. Public health involvement in developing walkable communities could help facilitate opportunities for leisure- and transportation-related physical activity. Furthermore, the consideration of social factors and equity in pedestrian plans is a particular area of opportunity for public health professionals to collaborate with planners. A movement is underway in the United States to ensure that planning processes



consider environmental, economic, and social factors that contribute to health (Corburn & Bhatia, 2007). Working on the development of pedestrian plans is one such way to ensure that consideration.

Promotions are the means by which initiatives connect with opinion leaders and the public, and programs are ongoing organized activities that engage individuals in physical activity (Bors et al., 2009). Our analysis confirmed an expectation we had that programs would be included more often in pedestrian plans with public health involvement, since programming often occurs within this department. Others have concluded that programming combined with promotions is a key element in promoting walking (Fesperman, Evenson, Rodriguez, & Salvesen, 2008) and bicycling (Pucher, Dill, & Handy, 2010). This is also a key element in the Active Living by Design Community Action Model, designed to bridge the gap between research and practice (Bors et al., 2009). Supported by the socioecological framework (McLeroy, Bibeau, Steckler, & Glanz, 1988), this model specifies five strategies to direct implementation activities including preparation, promotion, programs, policies, and physical projects (Kahn et al., 2002; Schmid, Pratt, & Witmer, 2006).

There are three additional broad areas in which public health professionals may be of particular use in collaborating with planners on pedestrian plans. First, public health professionals are an evaluation resource that was underutilized in the plans examined. Less than one quarter of the plans included an evaluation plan and, against our expectation, plans that included public health professionals were less likely to include an evaluation plan compared to those that did not involve public health professionals.

Second, successful evaluation is written into a plan during its development and, ideally, baseline measures are assessed before determining measurable plan objectives and prior to plan implementation. Public health professionals, with training in models of health program planning and evaluation such as PRECEDE-PROCEED (Gielen, McDonald, Bone, & GaryIn, 2008) and Re-AIM (Jilcott, Ammerman, Sommers, & Glasgow, 2007), can bring to their work with planning professionals a perspective in which indicators for evaluation are discussed, developed, and written into a pedestrian plan. Implementation and action steps within pedestrian plans are a second area with a potentially greater role for public health professionals. Public health professionals can also bring their knowledge to the discussion regarding health-related surveillance measures to be considered as outcome indicators. These forward-looking items indicate levels of involvement and ongoing collaboration by partners. Only five plans named public health professionals as a responsible party in future action items.

Third, consideration of social equity is increasingly important in both public health and urban planning. In planning, consideration of social equity has historical roots in the Civil Rights era (Davidoff, 1996). Similarly, the environmental justice movement within public health prompted the consideration of equity with respect to disproportionate exposures and burdens associated with race or social class (Wing, Barnett, Casper, & Tyroler, 1992). More recently, increasing social equity has been cited as a goal of planning movements such as new urbanism (Calthorpe, 1993), smart growth (Nelson & Dawkins, 2004), and sustainable development (Berke & Manta Conroy, 2000), which also emphasize walkable communities.

Advocacy planning (Krumholz, 1982) and communicative action (Healy, 1996) provided theoretical frameworks encouraging planners to promote the interests of low-income and non-White populations. These frameworks underscore the importance of public participation as a means of developing plans that meet the needs of “at risk” groups (Berke, 2002). However, the literature suggests that environmental justice or civil rights issues are often not considered in transportation planning decisions and that transportation planning boards lack representation from low-income and non-White residents (Sanchez & Wolf, 2005). Our results indicate that pedestrian plans in North Carolina are not documenting social justice and civil rights groups as stakeholders in the planning process. Involvement of public health professionals could stimulate discussions about how to increase engagement of these groups

### Limitations

This study was subject to several limitations. First, accurate documentation of public health professional involvement in plan creation relied on what was written in the plan. Whereas most plans identified partners in the process, one plan did not and we therefore assumed that public health professionals were not involved. We also do not know how much public health professionals were involved in the planning process, or whether their involvement was sustained over time. Second, our collection of all pedestrian plans could have inadvertently missed plans, as not all documents were easily accessible. However, we have made extensive efforts to diminish this concern.

Third, our analysis was comprehensive for the state of North Carolina; however, the sample size of the number of plans in the state was relatively small ( $n = 46$ ). This also precluded an exploration of differences in health professional participation by type of plan; we hypothesize that health professionals would be involved more often in municipal or county pedestrian plans as compared to regional pedestrian plans. Fourth, it is not known how generalizable our findings are to other states. Moreover, pedestrian planning can be encompassed in other planning documents, such as a community’s comprehensive land use plan, transportation plan, greenways plan, open space plan, or park master plan. For this study, we only collected and reported involvement in the development of stand-alone pedestrian or combined pedestrian/bicycle plans.

### Conclusions

Institutionalizing the role of public health in ongoing planning processes helps include health considerations in the decision making process (Planning for Healthy Places & Public Health Law and Policy, 2009). Institutionalizing the involvement of health departments and other public agencies that support walking and bicycling for nontransportation purposes could elevate the priority given to nonmotorized transportation planning (Handy et al., 2009). Local public health professionals are encouraged to seek out involvement in the pedestrian planning process. Professionals can lend their expertise in areas of potential improvement to these plans, particularly evaluation and health program development and implementation. Additionally, pedestrian planning is an opportunity to build a foundation for interagency coordination through collaboration toward a common goal of improving physical environments to enhance quality of life.



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**TABLE 1****Typical Components Found in a Pedestrian Plan**

<b>Component</b>
Vision
Goals
Assessment of current and future conditions
Review existing policies and programs
Assess population projections for future
Identify influential trends and forces
Public participation
Recommendations
Implementation
Timeline
Cost estimates
Review of potential funding sources
Evaluation and monitoring of plan implementation

Stakeholders Involved With North Carolina Pedestrian and Pedestrian/Bicycle Plans, Overall and by Year of Publication

TABLE 2

Stakeholders	Overall (N = 46)		1994–2005 (N = 11)		2006–2008 (N = 35)	
	n	Percentage	n	Percentage	n	Percentage
Committee or advisory board of stakeholders (including citizens)	41	89	8	73	33	94
Agency staff at local or state level:	41	89	10	91	31	89
Land use planning	34	74	8	73	26	74
State transportation planning	29	63	4	36	25	71
Parks and recreation	27	59	7	64	20	57
Regional transportation planning (MPO, RPO)	25	54	6	55	19	54
Engineering, public works	24	52	4	36	20	57
Law enforcement	19	41	1	9	18	51
Public health (local, county)	18	39	2	18	16	46
Local transportation planning	11	24	4	36	7	20
Public interest nonprofit groups:	24	52	4	36	20	57
Community-based organizations	14	30	3	27	11	31
Advocacy groups	12	28	3	27	9	26
Social justice and civil rights groups	3	7	1	9	2	6
Economic development groups	10	22	0	0	10	29
Environment or conservation groups	5	11	2	18	3	9
Health organizations	4	9	1	9	3	9
Foundations	3	7	2	18	1	3
School groups	17	37	2	18	15	43
Private for-profit groups	14	30	2	18	12	34

NOTE: MPO = metropolitan planning organization; RPO = rural planning organization.

TABLE 3

Goals Associated With North Carolina Pedestrian and Pedestrian/Bicycle Plans, Overall and Stratified by Public Health Participation in the Plan

Statement of Goals	Public Health Professional Involvement					
	Overall (N = 46)			Yes (N = 18)		
	n	Percentage	n	Percentage	n	Percentage
Health-related goals						
Improve safety, prevent injuries and accidents	41	89	18	100	23	82
Improve public health	24	52	10	56	14	50
Support walkable communities, active living, or active community environments	20	44	7	39	13	46
Enhance quality of life	18	39	6	33	12	43
Promote social equity						
At least two priority populations (elderly, low income, disabled)	11	24	5	28	6	21
All community members	10	22	3	17	7	25
Encourage general recreation	10	22	5	28	5	18
Encourage physical activity for leisure	5	11	3	17	2	7
Transportation- and planning-related goals						
Enhance pedestrian network connectivity	39	85	16	89	23	82
Improve or maintain existing pedestrian facilities	36	78	15	83	21	75
Create a balance transport system: support non-auto use	26	57	11	61	15	54
Instigate a cultural/attitudinal shift to accept walking for travel	18	39	6	33	12	43
Enhance aesthetics or community appearance	18	39	9	50	9	32
Encourage physical activity for transportation	12	26	5	28	7	25
Reduce congestion	9	20	5	28	4	14
Promote specific development patterns	6	13	4	22	2	7
Create a sense of place	5	11	2	11	3	11
Improve coordination among local governments and between local, regional, and state governments	3	7	0	0	3	11
Policies and funding-related goals						
Promote economic development	21	46	9	50	12	43
Improve policies to guide future investments and coordinate with other communities	16	35	5	28	11	39
Take advantage of funding (i.e., NC transportation grants)	11	24	2	11	9	32
Comply with other policies mandated by state and federal regulations	3	7	1	6	2	7



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Statement of Goals	Public Health Professional Involvement					
	Overall (N = 46)			Yes (N = 18)		
	n	Percentage	n	Percentage	n	Percentage
Environmental-related goals						
Protect or preserve natural environment	11	24	7	39	4	14
Address global climate change	2	4	0	0	2	7
Enhance protection from flooding, natural hazards, ect	1	2	0	0	1	4
Historic preservation goals						
Support historic preservation or cultural values	4	9	1	6	3	11

TABLE 4

Programs Associated With North Carolina Pedestrian and Pedestrian/Bicycle Plans, Overall and Stratified by Public Health Participation in the Plan

	Public Health Professional Involvement					
	Overall (N = 46)		Yes (N = 18)		No (N = 28)	
	n	Percentage	n	Percentage	n	Percentage
Cultural, recreational, and health-related programs to promote walking	34	74	16	89	18	64
Ongoing promotional activities or encouragement programs <sup>a</sup>	35	76	17	94	18	64
Are any safety and/or educational programs discussed or proposed? If yes, select which from the list below:	39	85	18	100	21	75
Law enforcement programs	29	63	13	72	16	57
Faith-based programs	0	0	0	0	0	0
Youth organization programs	3	7	2	11	1	4
Local agency initiatives	7	15	2	11	5	18
School-based initiatives	34	74	16	89	18	64
Driver training/driver education initiatives	8	17	5	28	3	11

<sup>a</sup>These programs engage individuals in physical activity either directly or indirectly and examples included Ozone Day, Earth Day, bike on bus, health promotion challenges, Walk to School Day/Month, and advocacy initiatives.